

Each of the present claims requires an analysis process that identifies the information content of a video signal to identify the perceptually relevant boundaries of the video images depicted therein. The Examiner erroneously equates this to the edges identified by the prior art "T1" reference but, as is described in detail in the present application, edges and boundaries are not the same thing, and in many images edges may not be perceptually relevant. For example, the present specification states at the end of page 4 to the top of page 5 (also see the examples where the edges are not the most significant boundaries as illustrated, for example, in Figure 7):

The basis for the invention is that elements present in the image are not of equal importance. An error will be more perceptible if it disrupts the shape of one of the essential features of the image. For example, a distortion present on an edge in the middle of a textured region will be less perceptible than the same error on the independent edge. This is because an edge forming part of a texture carries less information than an independent edge, as described by Ran, X., and Favardin, N., "A Perceptually Motivated Three-Component Image Model – Part II: Application to Image Compression", *IEEE Transactions on Image Processing*, Vol. 4, No. 4, pp. 713-724, April 1995. If, however, a textured area defines a boundary, an error that changes the properties of the texture throughout the textured area can be as important as an error on an independent edge, if the error causes the textured characteristics of the area to be lost. The present invention examines the cognitive relevance of each boundary, and the extent to which this relevance is preserved.

The identification of the relevance of a particular boundary whether defined by a simple edge as in T1, or by a change of texture, color or any other characteristic mentioned in the specification is complex but documented, for example, as shown above at pages 4-5 of the present specification.

Applicant's method and apparatus are concerned with making use of the relative relevance of such boundaries, and the degree to which they are preserved in the

"degraded" image, as a basis for measuring the perceived quality of the signal that would be perceived by a user. Methods of identification of such boundaries are discussed in detail throughout the present specification, but independent claims 1 and 12 relate to the generic concept, however they are identified. The cited prior art, on the other hand, identifies all edges, whether or not perceptually relevant and, thus, does not teach or suggest the "analyzing" feature of applicant's invention.

Accordingly, all of claims 1-20 are believe to patentably define over the T1 reference which does not teach or suggest "analyzing information content of each video signal to identify perceptually relevant boundaries of video images depicted therein" as required by each of the present claims.

The Examiner has also rejected claims 8, 19 and 20 under 35 USC §103(a) as being unpatentable over T1 in view of Western et al. Applicant respectfully traverses the Examiner's §103 rejection of the claims.

The Examiner has cited Western et al. merely for disclosing the further limitations in claims 8, 19 and 20. Accordingly, it is clear that the cited Western et al. reference also does not solve the deficiency noted above with respect to the T1 reference. More particularly, Western et al. does not teach or suggest utilizing information content of each video signal to identify perceptually relevant boundaries of the video images depicted therein. Accordingly, claims 8, 19 and 20 are also believed to patentably define over the cited references taken either singly or in combination.

The Examiner has also rejected claims 9 and 10 under 35 USC §103(a) as being unpatentable over T1 in view of Western et al. and further in view of Zhou. Since Zhou also does not solve the deficiency noted above with respect to the T1 reference and

Western et al., these claims are also believed to patentably define over the cited references taken either singly or in combination.

Therefore, in view of the above remarks, it is respectfully requested that the application be reconsidered and that all of the claims 1-20, standing in the application, be allowed and that the case be passed to issue. If there are any other issues remaining which the Examiner believes could be resolved through either a supplemental response or an Examiner's amendment, the Examiner is respectfully requested to contact the undersigned at the local telephone exchange indicated below.

Respectfully submitted,

**NIXON & VANDERHYE P.C.**

By: \_\_\_\_\_

  
Chris Comuntzis  
Reg. No. 31,097

CC:sij  
901 North Glebe Road, 11th Floor  
Arlington, VA 22203-1808  
Telephone: (703) 816-4000  
Facsimile: (703) 816-4100